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03-1530 (Serial No. 09/054, 565)

#23

In The
United States Court of Appeals
For The Federal Circuit

SOLICITOR

OCT 23 2003

U.S. PATENT & TRADEMARK OFFICE

IN RE JACK RICHARD SIMPSON,

APPEAL FROM THE UNITED STATES PATENT AND
TRADEMARK OFFICE, BOARD OF PATENT APPEALS AND
INTERFERENCES

BRIEF OF APPELLANT

Best Available Copy

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Date of Brief: October 20, 2003

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CERTIFICATE OF INTEREST

Counsel for the Appellant, Jack Simpson, certifies the following:

1. The full name of every party or amicus represented by me is:

JACK SIMPSON, an individual, and
CONTAINER GRAPHICS CORPORATION

2. The name of the real party in interest represented by me is:

CONTAINER GRAPHICS CORPORATION

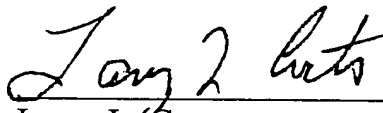
3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

NONE

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

COATS & BENNETT, PLLC, and Larry L. Coats

Dated: October 20, 2003



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TABLE OF CONTENTS

	Page
CERTIFICATE OF INTEREST	i
TABLE OF CONTENTS	ii
TABLE OF AUTHORITIES	iv
I. STATEMENT OF RELATED CASES	1
II. JURISDICTIONAL STATEMENT	1
III. STATEMENT OF THE ISSUES	2
IV. STATEMENT OF THE CASE	3
V. STATEMENT OF FACTS	3
A. MR. SIMPSON'S INVENTION	3
B. THE RILITZ PATENT	7
VI. SUMMARY OF THE ARGUMENT	9
VII. ARGUMENT	11
A. THE APPLICABLE STANDARD OF REVIEW	11
B. THE LAW OF ANTICIPATION	12
C. THE CLAIMS ARE NOT ANTICIPATED BY RILITZ	13
D. THE BOARD'S DECISION IS WRONG AS A MATTER OF LAW AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE	19
1. The Board Failed to Construe the Claims or if the Claims Were Construed by Implication They Were Incorrectly Construed	20

2.	The Board Misconstrued Rilitz	22
3.	The Board Ignored Material Limitations That Are Clearly Not Found in Rilitz.....	25
4.	The Board's View of the Law of Inherency is Wrong and Accordingly Its Conclusions of Anticipation is Not Supported by Any Evidence.....	27
E.	CLAIM 15 IS NOT ANTICIPATED BY RILITZ	30
F.	THE BOARD'S DECISION IS WRONG AS A MATTER OF LAW AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE	32
VIII.	CONCLUSION	34
ADDENDUM		
CERTIFICATE OF FILING AND SERVICE		
CERTIFICATE OF COMPLIANCE		

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Atlantic Thermoplastics Co. v. Faytex Corp.</i> , 970 F.2d 834 (Fed. Cir. 1992), <i>reh'g in banc denied</i>	21
<i>Gechter v. Davidson</i> , 116 F.3d 1454 (Fed. Cir. 1997)	12, 22, 32
<i>In re Bond</i> , 910 F.2d 831 (Fed. Cir. 1990)	12, 21
<i>In re Bulloch</i> , 604 F.2d 1362 (CCPA 1979)	32
<i>In re Hyatt</i> , 211 F.3d 1367 (Fed. Cir. 2000)	11, 32
<i>In re Rijchaert</i> , 9 F.3d 1531 (Fed. Cir. 1993)	2
<i>In re Robertson</i> , 169 F.3d 743 (Fed. Cir. 1999)	28, 32
<i>In re Thrift</i> , 298 F.3d 1357 (Fed. Cir. 2002)	33
<i>Lindermann Maschinenfabrik v. American Hoist & Derrick Co.</i> , 730 F.2d 1452 (Fed. Cir. 1984)	12, 14, 21
<i>Markman v. Westview Instruments, Inc.</i> , 52 F.3d 967 (Fed. Cir. 1995) (<i>en banc</i>) <i>aff'd</i> , 517 U.S. 370 (1996)	12, 32
<i>Pitney Bowes, Inc. v. Hewlett Packard Co.</i> , 182 F.3d 1298 (Fed. Cir. 1999)	26, 27

<i>Richardson v. Suzuki Motor Co.</i> , 9 U.S.P.Q.2d 1913 (Fed. Cir. 1989)	12
---	----

<i>Rowe v. Dror</i> , 112 F.3d 473 (Fed. Cir. 1997)	32
--	----

Statutes

35 U.S.C. § 102	3
35 U.S.C. § 102(b)	1, 2, 3, 34
35 U.S.C. § 102(e)	1
35 U.S.C. § 103	3
35 U.S.C. § 103(a)	1, 2, 3
35 U.S.C. § 112	2, 3
35 U.S.C. § 134	2
35 U.S.C. § 144	2

Other Authorities

<i>McGraw-Hill Dictionary of Scientific and Technical Terms</i> 112 (5 th ed. 1994)	16
<i>The American Heritage Dictionary of the English Language</i> 367 (1969)	14
<i>Webster's 9th New Collegiate Dictionary</i> 1054 (1985)	17

I. STATEMENT OF RELATED CASES

There are no related cases.

II. JURISDICTIONAL STATEMENT

On April 25, 2003, the Board of Patent Appeals and Interferences (Board) of the United States Patent and Trademark Office issued a decision in Appeal No. 2002-1913 relating to U.S. Patent Application Serial No. 09/054,565 (the '565 application). In its decision, the Board:

- affirmed the Examiner's rejection of claims 1-4, 6, 15-17, 19, 21, 24, 26 and 28 under 35 USC §102(b) as being anticipated by Rilitz;
- affirmed the rejection of claims 5, 7, 18 and 20 under 35 USC §103(a) as being unpatentable over Rilitz;
- reversed the rejection of claims 1-6, 8-10, 14-17, 19, 21, 24, 26, 28 and 29 under 35 USC §102(e) as being anticipated Okonski;
- reversed the rejection of claims 7, 18, and 20 under 35 USC §103(a) as being unpatentable over Okonski;
- reversed the rejection of claims 1-10, 14-21, 24, and 26-29 under 35 USC §103(a) as being unpatentable over Smithwick in view of Okonski;

- reversed the rejection of claims 1-10, 14-19, 21, 24, and 26-29 under 35 USC §103(a) as being unpatentable over Smithwick in view of Wright; and
- reversed the rejection of claims 16, 17, 19, and 26 under 35 USC §112 but affirmed the rejection of claims 8-10, 14 and 28 under 35 USC §112.

Under 35 USC §134 the Board had jurisdiction to hear the matter.

Jack R. Simpson, the Applicant in the '565 application, on June 23, 2003 filed a timely Notice of Appeal in the United States Court of Appeals for the Federal Circuit. This Court has jurisdiction under 35 USC §144. This Appeal is from a final order that disposes of all claims.¹

III. STATEMENT OF THE ISSUES

Whether claims 1-4, 6, 15-17, 19, 21, 24, 26 and 28 are unpatentable under 35 USC §102(b) as being anticipated by Rilitz, U.S. Patent No. 5,161,442.

¹ Before the Board, Mr. Simpson conceded to the Section 112 rejection of claims 8-10, 14 and 28. These Section 112 rejections are simple formalities that can be easily corrected and Mr. Simpson intends on rectifying the Examiner's Section 112 concerns after this Court has reviewed the Section 102(b) rejections. This has been discussed with the Solicitor's Office, and the Solicitor's Office has expressed no objection to Mr. Simpson dealing with the Section 112 rejections in that manner.

IV. STATEMENT OF THE CASE

On April 3, 1998 Mr. Simpson filed the '565 application entitled "Resilient Scrap Stripper for a Corrugated Board Rotary Cutting Die." The Examiner rejected all of Mr. Simpson's claims and set forth seven different grounds of rejections based on Sections 102, 103 and 112 and various prior art references. In its decision, the Board reversed the Examiner's rejections on a majority of the grounds. However, the Board did affirm the Examiner's rejections of claims 1-7, 15-21 and 24, 26 and 28 under 35 USC §102(b) and 103(a) in view of Rilitz. Mr. Simpson appeals from this decision of the Board.

V. STATEMENT OF FACTS

A. MR. SIMPSON'S INVENTION

Mr. Simpson's invention is a rotary cutting die 40 for cutting corrugated board products such as a corrugated box.² In manufacturing corrugated boxes, a blank corrugated board CB is fed into the nip 64 of rotary die 40. A number of separate and distinct operations are performed on the corrugated board CB by die 40. For example, the corrugated board is trimmed, creased in certain places, and openings or slots are cut in the corrugated board. When an opening or slot is cut in the corrugated board CB the material cut to form the opening or slot is referred to

² Die 40 is suitable for manufacturing different corrugated board products. However, corrugated boxes make up the vast majority of products manufactured by such dies. Therefore, in describing the cutting die 40, the end product is simply referred to as a corrugated box.

as "scrap." The problem that arises is that the cut scrap tends to become stuck or lodged in the corrugated board CB or within the scrap cutting blades 54, 56. To produce a clean product it is necessary to eject this scrap and separate the scrap from the final product leaving die 40. A24-26, 31-39, 51-56.

Die 40 includes a pair of cooperating cylinders, a cutting cylinder 50 and an anvil cylinder 60. Cutting cylinder 50 includes a cylindrical die board or base 52. Mounted on base 52 is a series of blades that trim, cut and score selective areas of the corrugated board CB. Forming a part of the various blades on the die is a series of scrap cutting blades 54, 56. A51-56. In addition, a series of scrap strippers 10 is mounted on the base 52 adjacent the scrap cutting blades 54, 56 for engaging cut pieces of scrap and ejecting the scrap pieces from the corrugated board CB. A31-39. Figure 4A, reproduced below, shows the pair of scrap cutting blades 54, 56 extending from the base 52 as well as a pair of scrap strippers 10 disposed between the scrap cutting blades 54, 56. A53.

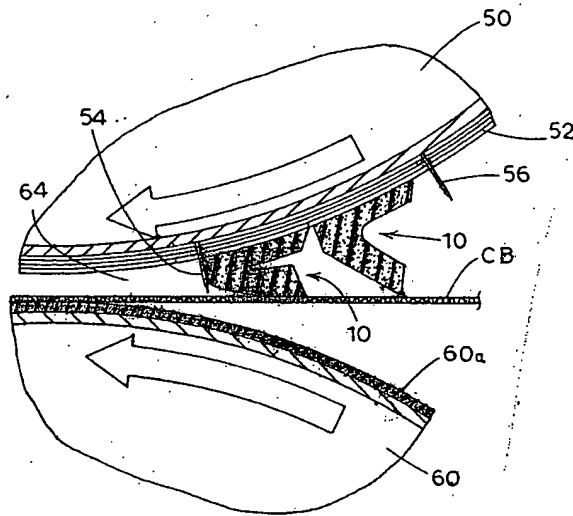


Fig. 4A

Also, reproduced below is Figure 2 which shows the scrap stripper 10. Scrap stripper 10 includes a base 12 and a flexible finger 22 integral with the base 12 and extending over the base at an acute angle such that an opening is defined between the base 12 and the flexible finger 22. A52.

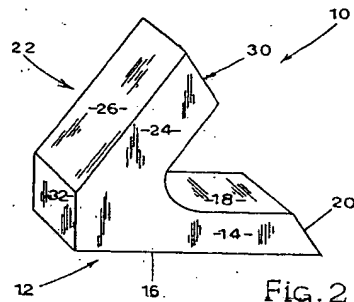


Fig. 2

Anvil cylinder 60 cooperates with the cutting cylinder 50 to cut the scrap from the corrugated board CB. Scrap cutting blades 54, 56 penetrate through the corrugated board CB and cut against the underlying rotating anvil 60. Secured

around the anvil 60 is a layer of neoprene rubber 60a against which the blades and particularly the scrap cutting blades 54, 56 cut. Typically the cutting and anvil cylinders 50 and 60 are disposed closely adjacent each other such that a nip or nip area 64 is defined between the cutting and anvil cylinders. A31-33, 52-55.

Figures 4A-4F illustrate the operation of die 40 and particularly the manner in which the scrap strippers 10 eject scrap cut from the corrugated board CB. A53, 54. For convenience, Figures 4C and 4D are shown below.

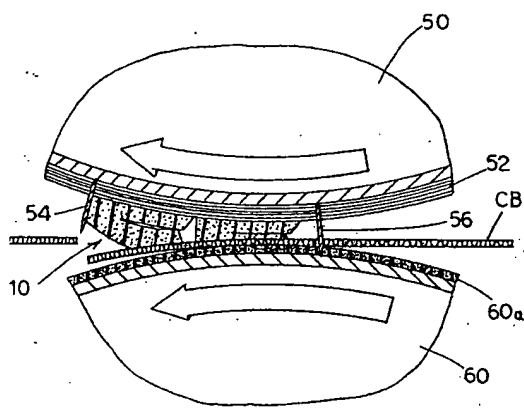


Fig. 4C

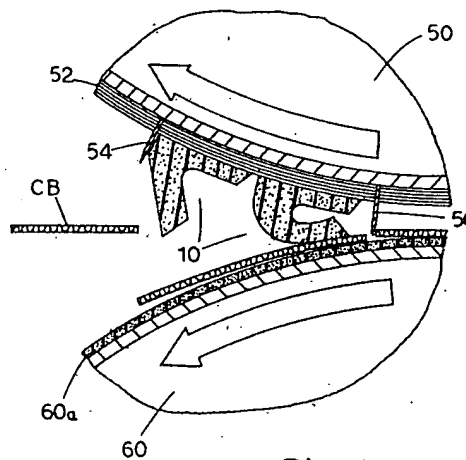


Fig. 4D

During the cutting operation, each scrap stripper 10 is disposed between the cutting cylinder 50 and the corrugated board CB being directed through the die. As each scrap stripper 10 enters nip 64 the entire stripper 10, including the base 12 and angled finger 22, is compressed as the adjacent scrap cutting blades 54, 56 cut a piece of scrap from the corrugated board CB. A52-54. As the scrap strippers 10 exit the nip 64, the strippers 10 are still disposed between the cut scrap piece and

the cutting cylinder 50. However, as the scrap strippers 10 exit the nip 64, the scrap strippers expand and as they expand they strip the underlying piece of cut scrap from the corrugated board CB and the adjacent scrap cutting blades 54, 56. A54-55.

Further, as each scrap stripper 10 exits the nip 64, the angled finger 22 of the scrap stripper extends, and in the process engages and pushes the cut scrap piece against the underlying rotating anvil 60. *Id.* The ability of the angled finger 22 to extend substantially beyond the height of the adjacent scrap cutting blades 54, 56 enables the flexible finger to hold the cut scrap piece against the anvil 60 on the downstream side of the nip 64. *Id.* Thus, it follows that this causes the cut scrap piece to be separated from the corrugated board product that exits the die 40. In particular, the extension of the angled finger 22 as it exits the nip 64 pushes the cut scrap piece downwardly along the downstream side of the anvil 60 where the anvil engages the cut scrap and shoots it downwardly away from the product that exits the cutting die. This separates the scrap from the product.

B. THE RILITZ PATENT

Rilitz discloses a cutter for cutting a web 3 into sheets 26. A76-81. The cutter is a so-called cross cutter "which can be utilized to sub-divide running webs or strips of flexible material into panels, sheets or lengths of a desired size and shape." *Id.* 78. Rilitz's cross cutter comprises upper and lower conveyors 1 and 2

VI. SUMMARY OF THE ARGUMENT

Mr. Simpson's invention is a rotary cutting die for cutting scrap from a corrugated board and separating the scrap from a resulting product. As defined in claim 1 the invention comprises a die, at least one scrap cutting blade, a scrap stripper having both a base and flexible finger, and an anvil that cooperates with the scrap stripper to separate the scrap from the resulting product. Claim 15 is similar to claim 1 except it does not include the anvil related limitations.

All the claims are rejected as being anticipated by Rilitz. Rilitz is a cross cutter for cutting a web into a plurality of usable sheets 26. A76. A pair of knives 8, 11 is mounted to a pair of rollers 1, 2. The web 3 is fed between the rollers 1, 2. On each revolution of the rollers 1, 2, the knives come into contact and cut a usable sheet 26 from the web 3, leaving a leader 25. This is continued until the entire web 3 is cut into sheets 26. Rilitz's cross cutter also includes a pair of guides 13, 14 which steer and guide the leader 25 into position to be cut when the knives make the next revolution.

Rilitz is not a die, nor does Rilitz disclose an anvil, a scrap cutting blade or a scrap stripper. Further, Rilitz does not disclose a scrap stripper that engages cut scrap and urges the cut scrap against the underlying anvil that, in turn, act to separate the cut scrap from the product. The guides 13, 14 do not include a base and a flexible finger. They only include a single lip shaped deflector.

The Rilitz apparatus has nothing whatsoever to do with cutting and separating scrap from a product. Rather, the Rilitz device is simply a double bladed cutter having a pair of knives 8, 11 that repeatedly come in contact with each other to cut the web into usable sheets. Rilitz does not cut and separate scrap from a product nor could the Rilitz device function to cut and eject scrap from a product.

The Board in affirming the Examiner in this case made a number of critical mistakes. In that regard no claim construction analysis was performed. No discussion of the ordinary meanings of these contested claim terms were discussed, and not one time did the Board look to Mr. Simpson's specification and drawings to determine how these terms are used and are defined. Further, there was no consideration as to how a person of ordinary skill in the art would have construed these terms in light of the specification. This is clear error.

Having failed to engage in any meaningful claim construction, the Board simply proceeded to read the terms scrap cutting board and scrap stripper on the knives and guides of Rilitz without regard to the true meaning of these terms. Since these claim limitations are not found in Rilitz there is no substantial evidence supporting the Board's anticipation analysis.

In conducting its anticipation analysis, the Board further erred by ignoring the limitations of "die", "anvil" and the special relationship claimed between the

scrap stripper and anvil. Die is used in the preamble of claims 1 and 15 while anvil is used in claim 1. But, in both cases, die and anvil are used in the body of the claims and each imparts life and meaning to the claims. Indeed, in the context of their usage in claims 1 and 15, these terms are necessary to describe Mr. Simpson's invention. As noted above, in claim 1 there is a special relationship claimed between the scrap stripper and the anvil. Here the scrap stripper strips the scrap from the scrap cutting blade and urges the scrap against the anvil which shoots the scrap away from the product. The Board failed to even recognize this limitation.

Finally, the Board relied on the doctrine of inherency. However, in relying on this doctrine the Board mistakenly concluded that if the Rilitz device was "inherently capable" of meeting these limitations that such was sufficient for anticipation purposes. That is a misstatement of the law of inherency. As discussed later, in order for an element or a limitation to be inherent in a disclosure, it must necessarily be present. Possibilities and probabilities will never suffice for inherency.

VII. ARGUMENT

A. THE APPLICABLE STANDARD OF REVIEW

Anticipation is a question of fact. In order to uphold the Board's decision, there must be substantial evidence in the record to support the Board's finding. *In re Hyatt*, 211 F.3d 1367 (Fed. Cir. 2000). Implicit in this Court's review of the

Board's anticipation analysis is that the claims must have been correctly construed to define the scope and meaning of each contested limitation. *Gechter v.*

Davidson, 116 F.3d 1454, 1457 (Fed. Cir. 1997). Claim construction is a question of law and therefore is reviewed *de novo*. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*) *aff'd*, 517 U.S. 370 (1996).

B. THE LAW OF ANTICIPATION

In order to anticipate, each and every element and limitation of a claim must be present in a single reference. *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990). That is, the identical invention, as claimed, must be shown in as complete detail as contained in the claims. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Expressed in another way, in order for anticipation to exist, not only must a single reference show each and every limitation of the claim, but the single prior art reference must show the identical invention as precisely described in the claim. Indeed, anticipation requires that the single prior art reference disclose every element and limitation of the claimed invention arranged in the same manner as claimed. *Lindermann Maschinenfabrik v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

C. THE CLAIMS ARE NOT ANTICIPATED BY RILITZ

Claim 1 is as follows:

1. A rotary cutting die for cooperating with a rotary anvil to cut corrugated board comprising:

- (a) a base;
- (b) at least one scrap cutting blade secured to the base of the cutting die for cutting a piece of scrap from a sheet of corrugated board that is directed through a nip defined between the cutting die and the anvil;
- (c) at least one scrap stripper mounted to the base adjacent the blade for stripping a cut scrap piece from the blade and for urging the cut scrap piece against the anvil as the cut scrap piece exits the nip;
- (d) at least one scrap stripper being constructed of a resilient and compressible material and including a base, and a flexible finger integral with the base and extending outwardly over the base and at an acute angle with respect to the base such that an opening is defined between the angled finger and the base; and
- (e) wherein the flexible finger is movable between a retracted position where the finger lies adjacent the base and an extended position where at least a portion of the finger is separated from the base.

A19.

There are a number of material limitations in claim 1 that are not met, expressly or inherently, by Rilitz. First, claim 1 is limited to a rotary cutting die. The term "cutting die" is recited in both the preamble and body of the claim. The claimed invention is limited to a cutting die. Likewise, both the preamble and

body of the claim include the "anvil" element. This is another limitation of the claimed invention. Further, the claim requires at least one "scrap cutting blade" and at least one "scrap stripper." Claim 1 is additionally limited to the scrap stripper stripping a cut scrap piece from the scrap cutting blade and urging the cut scrap piece against the anvil as the cut scrap piece exits the nip that is defined between the cutting die and the anvil. Finally, the claimed invention requires that the scrap stripper include a base and a flexible finger extending outwardly over the base and further requires that both the base and the flexible finger be constructed of a resilient and compressible material.

Like an infringement or obviousness analysis, an anticipation analysis always begins with construing the terms of a claim. *Linderman*, 730 F.2d at 1458. It follows, of course, that if the claim terms are not construed and not construed properly, then comparing the claims with the alleged anticipating reference is meaningless.

The American Heritage Dictionary defines die as:

Any of various devices used for cutting out, forming or stamping material.³

Turning to the specification and drawings, when Mr. Simpson refers to a cutting die he is referring to a device that cuts out and removes scrap from the

³ *The American Heritage Dictionary of the English Language* 367 (1969).

product being operated on. In stating the object of the invention, Mr. Simpson states:

It is therefore an object of the present invention to provide a rotary cutting die that will effectively separate cut scrap from corrugated board product.

A28.

Throughout the specification the rotary cutting die 40 is described as a device that includes scrap cutting blades 54, 56 that, along with the scrap strippers 10, cut and separate scrap from the corrugated board product. A31-39. The drawings in Mr. Simpson's application clearly show a die at work. See Figures 4A-4F which show the scrap cutting blades 54, 56 cutting out scrap from the product and the scrap strippers 10 stripping that scrap and pushing the scrap downwardly onto the rotating anvil 60. A51-56. In this case the term die should be construed to comport with an ordinary meaning and with the manner in which Mr. Simpson uses the term in the specification. Consistent with that, the term "die" means a device that operates on a product and cuts out and removes waste material from the product being operated on. A simple cutter that cuts a product into individual usable pieces is not a die. Die cannot be given a reasonable interpretation that is so broad as to encompass the cutting device of Rilitz. Like a pair of scissors, the Rilitz device is simply a cutter - not a die. No evidence of

record suggests that the term "die" can reasonably be construed to encompass a pair of cooperating knives.

Turning to the term "anvil," the ordinary dictionary meaning is:

[ENG] 1. The part of a machine that absorbs the energy delivered by a sharp force or blow. 2. The stationary end of a micrometer caliper. [MET] 1. A heavy wrought-iron, cast-iron, or steel block upon which metal is hammered in smith forging. 2. The base of the hammer, holding the die bed and lower die part in drop forging.⁴

Mr. Simpson's use of anvil does not completely square with the ordinary meaning. Rather, Mr. Simpson, to some extent, has acted as his own lexicographer and has used the term as it is commonly used in the corrugated board industry to describe the lower cylinder of a rotary cutting die. As described and shown in Mr. Simpson's application, the anvil 60 forms the lower part of the die and provides two basic functions. First, it provides a surface against which the various blades of the die, including the scrap cutting blades 54, 56, cut the board CB. The anvil does not include any blades, and does not itself cut the corrugated board CB. Secondly, the anvil plays a major role in separating the cut scrap from the product. As discussed above, the scrap strippers 10 engage and urge the cut scrap against the anvil 60 as the cut scrap exits the nip 64, and the anvil, as shown in Figure 4F,

⁴ *McGraw-Hill Dictionary of Scientific and Technical Terms* 112 (5th ed. 1994).

shoots the separated cut scrap downwardly away from the resulting product. A31-32, 54.

There is no such anvil in the Rilitz disclosure. Recognizing that Rilitz does not expressly disclose an anvil, the Board suggests that the lower conveyor 2 might meet this limitation through the doctrine of inherency. A8. There is absolutely no evidentiary basis for that finding. Lower roller 2 never engages the upper knife 11 nor does it ever engage the cut product strip 26 on the downstream side of the lower roller. The lower roller 2 plays no role in separating anything from the web 3. No reasonable interpretation of the term anvil can be so broad as to encompass the lower conveyor 2 of the Rilitz patent. A77.

In the context of manufacturing, Webster defines "scrap" as:

Fragments of stock removed in manufacturing or manufactured articles or parts rejected or discarded and useful only as material for reprocessing.⁵

Mr. Simpson's disclosure leaves no doubt as to the meaning of scrap.

Rotary cutting dies of the type described above are often employed to produce slots for various shaped openings in the blank sheet of corrugated board material that is being processed. As such, provisions for removing or stripping the severed scrap material from certain cutting blades and the process blank must be provided. Otherwise, if not actively removed from the vicinity of the cutting die, the scrap material tends to collect around the cutting blades and render the rotary cutting die inoperable.

A24-25

⁵ Webster's 9th New Collegiate Dictionary 1054 (1985).

Scrap should be construed to mean waste material cut and separated from a product. Throughout the specification and the drawings the terms "scrap cutting blade" and "scrap stripper" identify a blade used for cutting scrap material from the corrugated board, and a particular scrap stripper that engages the cut scrap material and strips the scrap material from the corrugated board, respectively. The "scrap stripper" also holds the stripped scrap material against the adjacent anvil so as to separate the scrap material from the product produced by the rotary cutting die. A31-39, 51-56.

The terms "scrap cutting blade" and "scrap stripper" cannot be construed so broadly as to encompass the knives 8, 11 and guides 13, 14 of Rilitz. The interpretation of scrap cutting blade can only encompass a blade that cuts scrap from a product with scrap being deemed waste that is removed from the product itself. A similar analysis applies to the term "scrap stripper." The term "scrap stripper" does not encompass a device unless the device actually strips scrap from a product. That is how Mr. Simpson used the term and that is how the term should be construed in this case.

Claim construction is, of course, a question of law and is reviewed *de novo*. In this case the claims were not even construed. However, if for some reason the Court believes that they were implicitly construed, that construction is wrong as a

matter of law and the affirmation of the Examiner's anticipation rejection should be reversed on that basis alone.

D. THE BOARD'S DECISION IS WRONG AS A MATTER OF LAW AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE.

The Board's decision rests on a series of mistakes. First, the Board performed no claim interpretation analysis. Secondly, the Board misconstrued the Rilitz patent. Third, the Board failed to consider all of the limitations in the claims. Fourth, the Board misunderstood and misapplied the doctrine of inherency. Finally, in analyzing the claims, the Board's decision is confusing. It is not readily apparent which limitations the Board found to be expressly present in Rilitz and which limitations the Board found to be present through inherency.⁶ A5-9. A *prima facie* case of anticipation was never made.

⁶First, the Board seems to imply that claims 1 and 15 are expressly met by Rilitz.

In explaining how and why independent claims 1 and 15 are fully met by Rilitz, the examiner reads the limitations in these claims pertaining to the base (claim 1) or board (claim 15), the scrap cutting blade and the scrap stripper on the knife-clamping device 7, the knife 8 and the guide 13, respectively, of Rilitz's lower rotary drum 2a (see pages 4 and 9 through 12 in the answer). The appellant counters that since Rilitz does not relate to a die cutter for cutting and ejecting scrap from a corrugated board, it fails to meet the various functional limitations in claim 1 and 15 which define the scrap cutting blade and the scrap stripper, and that Rilitz additionally fails to meet the structural limitations in these claims defining the scrap stripper (see pages 7 through 10 in the brief).

Each of these mistakes is sufficient in itself to warrant reversal.

Collectively they point to the inescapable conclusion that Rilitz does not anticipate Mr. Simpson's claims. In the end there is no substantial evidence that supports the Board's decision.

1. The Board Failed to Construe the Claims or if the Claims
Were Construed by Implication They Were Improperly Construed

The Board devoted approximately 3½ pages to the Rilitz anticipation issue.

A5-9. No place therein does the Board even mention claim interpretation, or indulge, expressly or implicitly, in a claim interpretation analysis. The Board does not even acknowledge that there is a claim interpretation issue with respect to die, anvil, scrap cutting blade, scrap stripper, or any terms in the claims for that matter. There is not one reference to Mr. Simpson's specification or drawings and how the terms should be construed in light of the specification and drawings. There is no

The examiner's position here is well founded; the appellant's is not.
A7-8.

Then later the Board acknowledges that all of the claimed limitations are not expressly found in Rilitz, but that the remaining limitations are present under the principles of inherency.

The Appellant has not cogently explained or established, nor is it apparent, why Rilitz's lower rotary drum 2a and the components mounted thereon are not inherently capable of use as a die cutter for cutting and ejecting scrap from the corrugated board. Thus, Rilitz meets the functional limitations in claims 1 and 15 under principles of inherency.

A8.

discussion as to how a person of ordinary skill in the art would interpret the claims in light of the specification and drawings. See *Atlantic Thermoplastics Co. v. Faytex Corp.*, 970 F.2d 834 (Fed. Cir. 1992), *reh'g in banc denied* (the procedure of giving terms their broadest reasonable interpretation does not relieve the PTO of its essential task of examining the entire disclosure to determine the meaning of words and phrases in claims); *In re Bond*, 910 F.2d 831 (Fed. Cir. 1990) (terms and phrases in a claim must be interpreted consistently with the interpretation that would be given by one skilled in the art). Instead, the Board treated Mr. Simpson's claims as a catalog of parts and engages in a superficial exercise where the limitations in the claims are indiscriminately read on certain parts of the Rilitz cross cutter.

This is fundamental error. The law is clear. Anticipation cannot be determined in the absence of a claim interpretation analysis. It is basic that the Board must first identify the elements of the claims, determine their meaning in light of the specification and prosecution history, and identify corresponding elements disclosed in the allegedly anticipating reference. *Lindermann* 730 F.2d at 1458. Such an analysis cannot be found in the Board's opinion. A5-9. This Court has indicated what it expects.

We expect the Board's anticipation analysis to be conducted on a limitation by limitation basis, with specific fact findings for each contested limitation and satisfactory explanations for such findings. Claim construction must also be explicit.....

Gechter 116 F.3d at 1460 (footnote omitted).

Unquestionably the Board did not expressly engage in a claim construction analysis. To the contrary, the Board wholly bypassed claim construction. The Board simply affirmed the Examiner's reading of certain claimed limitations on Rilitz, and then in conclusionary fashion held that all other limitations are met by inherency. A7-8. Had the Board considered the ordinary meaning of die, anvil, scrap cutting blade and scrap stripper, and examined the specification and drawings to understand the meaning and usage of these terms, the decision would necessarily have been different. Unfortunately the Board did neither.

Concerning the terms "die" and "anvil" the Board appears to have concluded that these terms were not even limitations of the claims. This perhaps stems from the fact that these terms are used in preambles. However, as will be explained more fully below, both die and anvil, while used in the preamble, are also used in the body of the claims, are a part of Mr. Simpson's claimed invention, should have been considered limitations of the claims, and should have been a part of the anticipation analysis. They were not.

2. The Board Misconstrued Rilitz

The Board's entire anticipation analysis is short. First, the Board agreed with the Examiner that: the base or board (as found in claims 1 and 15) was met by Rilitz's knife clamping device 7; the scrap cutting blade was met by Rilitz's

knife 8; and the claimed scrap stripper was met by Rilitz's guide 13. The Board also agreed that Figure 2 of Rilitz showed that the guide 13 comprised a compressible base and a compressible flexible finger. A7-8. That is the total extent of what the Board considers Rilitz to expressly meet. Otherwise, as alluded to above, the remaining limitations are said to be anticipated through inherency.

Had the Board performed any meaningful claim interpretation analysis, it could not have concluded that the scrap cutting blade and scrap stripper recited in the claim, were expressly met by Rilitz's knife 8 and guide 13. The Board has stricken the term "scrap" from the claims and in effect redrafted Mr. Simpson's claims. Essentially, the Board has concluded that a die is any type of a cutter, a scrap cutting blade is any type of blade, a scrap stripper is any type of guide or deflector, and that every other limitation of the claims is met through inherency.

The Rilitz cross cutter does not cut or remove one piece of scrap from the web. Indeed there is no scrap material to be removed from the web 3. Rilitz is simply a cutter whose sole and only function is to cut the web 3 into a series of useful strips 26. Strips 26 are product - not scrap. Knives 8,11 in Rilitz are no different than a pair of scissors used to cut a web into smaller pieces. Guides 13, 14 engage no scrap and perform no work relating to separating waste material from the web 3. Clearly, neither guide 13 or 14 engage scrap and urge the scrap against an anvil which acts to separate the scrap from the resulting product.

This mounting block is not a part of the guide. Importantly, the claims call for the scrap stripper, including both the base and the flexible finger, to be resilient and compressible. Mr. Simpson acknowledges that the lip-shaped guides 13, 14 are compressible, but the small blocks that mount the guides 13, 14 to the knife mounting blocks 7, 9 are not disclosed as being compressible. There is absolutely no indication in Rilitz that these small attaching blocks are either resilient or compressible. Nor is there any reason one of ordinary skill in the art would make the assumption that they are. Making the attaching blocks resilient or compressible would afford no advantage to Rilitz's web cutter. Nor is there any indication that the attaching blocks form a part of the guides 13, 14. Indeed, if the small blocks were a part of the guides 13, 14, the Rilitz specification would have indicated such.

Thus the finding that the guides of Rilitz comprise both the lip-shaped deflectors and the separate mounting block and that both are resilient and compressible is wholly unsupported. That factual conclusion is wrong and not supported by substantial evidence, which alone warrants reversal.

3. The Board Ignored Material Limitations That Are Clearly Not Found in Rilitz.

There was no limitation by limitation analysis performed by the Board. In claim 1 the scrap stripper is limited to a device that engages the cut piece of scrap and urges the cut piece of scrap against an anvil as the cut scrap piece exits the nip. It is uncontroverted that Rilitz does not disclose an anvil and certainly does not

disclose a stripper of any type for engaging cut scrap and directing the cut material against the anvil. For this reason alone, claim 1 and the claims depending therefrom cannot be anticipated by Rilitz.

This does not depend on the anvil being considered a part of the claimed apparatus. That is, whether the anvil is or is not a part of the claimed apparatus, the claim still requires the scrap stripper to engage the cut scrap and urge the cut scrap against an anvil. However, the anvil recited in the preamble and in the body of claim 1 is a part of the claimed apparatus. Structure recited in the preamble is limiting when such is necessary to give life, meaning and vitality to the claim.

Pitney Bowes, Inc. v. Hewlett Packard Co., 182 F.3d 1298, 1305 (Fed. Cir. 1999).

In the case of claim 1, the rotary anvil is recited in the preamble and in paragraphs (b) and (c) of the body of the claim. That is, the anvil is described in relationship to both the scrap cutting blade and the scrap stripper. In addition, the recitation of the anvil in paragraph (c) of claim 1 is necessary to describe the functionality of the scrap stripper. Thus, the rotary anvil, as first introduced in the preamble, is intimately meshed with the ensuing language in the claim and accordingly must be deemed a limitation. See *Pitney Bowes Inc.*, 182 F.3d at 1306.

Likewise, the Board ignored the cutting die limitation.⁷ Perhaps the Board ignored the cutting die limitation because it was first introduced in the preamble. However, in the case of claim 1, for example, the cutting die is referred to twice in paragraph (b) in connection with describing the scrap cutting blade and what the scrap cutting blade is secured to, and in describing the location of the nip. In general, an element recited in the preamble limits the invention if it recites essential structure or if it is necessary to give life, meaning and vitality to the claim. *Id.* There can be no doubt that the cutting die is an essential structural element of a claim and that it is indeed necessary to give life and meaning to the claimed invention.

4. The Board's View of the Law of Inherency is Wrong and Accordingly Its Conclusions of Anticipation is Not Supported by Any Evidence.

From the Board's opinion it is appreciated that claims 1 and 15 were not expressly met by Rilitz. The Board relied on the doctrine of inherency.

The appellant has not cogently explained or established, nor is it apparent, why Rilitz's lower rotary drum 2a and the components mounted thereon are not inherently capable of use as a die cutter for cutting and ejecting scrap from a corrugated board. Thus, Rilitz meets the functional limitations in claims 1 and 15 under principles of inherency (emphasis added).

A8.

⁷ The Board did, however, take the position that it considered the lower rotary drum of Rilitz to be inherently capable of use as a die cutter for cutting and ejecting scrap from a corrugated board. A8. That is not the same as concluding that the claims are limited to a cutting die and that Rilitz meets this limitation expressly or inherently.

E. CLAIM 15 IS NOT ANTICIPATED BY RILITZ.

Claim 15 is as follows:

15. A rotary cutting die having one or more scrap strippers for stripping cut scrap pieces from one or more scrap cutting blades associated with the cutting die comprising:

- (a) a board;
- (b) at least one blade mounted on the board for cutting scrap;
- (c) at least one resilient scrap stripper formed independently of the board and mounted on the board adjacent the scrap cutting blade for stripping a cut scrap piece from the blade; and
- (d) the scrap stripper being constructed of a compressible material and including a base, an outer flexible portion extending outwardly over the base and at an acute angles with respect to the base and being movable back and forth between an extended position and a retracted position, and an open relief area defined intermediately between the outer portion and the base within the scrap stripper that permits the outer flexible portion to flex back and forth between the extended and retracted positions.

A20-21.

Claim 15 parallels claim 1 except that claim 15 does not include the anvil related limitations and simply recites "one blade mounted on the board for cutting scrap." Otherwise claim 15 is substantially similar to claim 1. That is, claim 15 is limited to a rotary cutting die having one or more scrap strippers for stripping cut scrap pieces from one or more scrap cutting blades associated with the cutting die. Claim 15 specifically calls for a board, at least one blade mounted on the board for cutting scrap and at least one resilient scrap stripper formed independently of the

board and mounted on the board adjacent the scrap cutting blade for stripping a cut scrap piece from the blade. Further, claim 15 is limited to the scrap stripper including both a base and an outer flexible portion extending over the base wherein the base and outer flexible portion are both constructed of compressible material.

Many of the same arguments advanced with respect to claim 1 apply here. The Board failed to construe the claims. If this Court can somehow conclude that the claims were construed by implication, then the construction was wrong. In the end, the Rilitz disclosure simply does not show a cutting die, a blade for cutting scrap, at least one resilient scrap stripper mounted adjacent the scrap cutting blade for stripping a scrap piece from the blade. Further, the Rilitz patent does not show a scrap stripper comprised of both a base and an outer flexible portion extending outwardly over the base where both the base and the outer flexible portion are constructed of a compressible material. The fatally flawed inherency findings of the Board also apply to claim 15.

Therefore, for the same reasons advanced above, claim 15 and the claims depending therefrom are not anticipated by Rilitz. Accordingly the Board's affirmation of the Examiner's rejection must be reversed.

F. THE BOARD'S DECISION IS WRONG AS A MATTER OF LAW AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE.

Mr. Simpson realizes that anticipation is a question of fact and in order to affirm the Board's decision there must be substantial evidence in the record to support the Board's finding. In finding anticipation by inherency, the Board ignored the foregoing critical principles. The Board made no attempt to show that Rilitz "necessarily" disclosed a die cutter for cutting and ejecting scrap from corrugated board, or that an artisan of ordinary skill would so recognize. It cited no extrinsic evidence so indicating. See *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). Further, Mr. Simpson recognizes that the Board may give claims their broadest reasonable interpretation consistent with the specification and consistent with how a person of ordinary skill in the art would construe the claims. *In re Hyatt*, 211 F.3d 1367 (Fed. Cir. 2000). The Board is not relieved of the essential task of examining the entire specification to discern the meaning of words and phrases in the claims. *Rowe v. Dror*, 112 F.3d 473, 480 (Fed. Cir. 1997); *In re Bulloch*, 604 F.2d 1362, 1365 (CCPA 1979)(claims are interpreted by viewing the specification and record to discern what the applicant claim).

Implicit in the Court's review of the Board's anticipation analysis is that the claims must have been correctly construed to define the scope and meaning of each contested limitation. *Gechter*, 116 F.3d at 1457. Claim construction is a question of law and therefore reviewed *de novo*. *Markman*, 52 F.3d at 979. As discussed

above, there was no claim construction analysis of die, anvil, scrap cutting blade or scrap stripper. Indeed, there was no implicit claim interpretation analysis. Further, the claims cannot be construed so broadly that these terms can be read on the Rilitz disclosure. For these reasons, the decision of the Board must be reversed.

Besides claim construction there is another legal issue in this case that must be reviewed *de novo*. That question of law concerns the Board's articulation of the law of inherency. In relying on the doctrine of inherency, the Board clearly set forth a standard for inherency that is contrary to the law. On that basis alone, the Board's decision must be reversed as a matter of law.

Both of these issues - claim construction and the law of inherency - should be reviewed without any deference to the Board.

Even if the Board had construed the claims and construed them properly, and even if the Board correctly applied the doctrine of inherency, still there is not substantial evidence that supports anticipation. If the cited reference does not support each limitation of the claim then the decision is not supported by substantial evidence. *In re Thrift*, 298 F.3d 1357, 1366 (Fed. Cir. 2002). That is, if any one of the limitations is not found in Rilitz, then there can be no substantial evidence supporting the Board's decision. In this case the Board's decision is not supported by substantial evidence because Rilitz does not disclose a die, anvil, scrap cutting blade, scrap stripper, or numerous limitations discussed above.

VIII. CONCLUSION

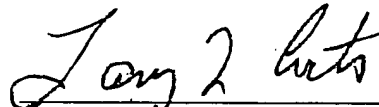
For the foregoing reasons, the decision of the Board affirming the Examiner's rejection of claims 1-7, 15-21, 24, 26 and 28 under 35 USC §102(b) should be reversed.

Respectfully submitted,

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ADDENDUM

TABLE OF CONTENTS

Addendum Page

Decision of The Board of Patent Appeals and Interferences Re: Appeal No. 2002-1913 filed April 25, 2003	A1
United States Patent No. 5,161,442 dated November 10, 1992	A16

Appeal No. 2002-1913
Application No. 09/054,565

THE REJECTIONS

Claims 8 through 10, 14, 16, 17, 19, 26 and 28 stand rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter the appellant regards as the invention.

Claims 1 through 4, 6, 15 through 17, 19, 21, 24, 26 and 28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Rilitz.

Claims 5, 7, 18 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rilitz.

Claims 1 through 6, 8 through 10, 14 through 17, 19, 21, 24, 26, 28 and 29 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Okonski.

Claims 7, 18 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Okonski.

Claims 1 through 10, 14 through 21, 24 and 26 through 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Smithwick in view of Okonski.

Claims 1 through 10, 14 through 21, 24 and 26 through 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Smithwick in view of Wright.

Appeal No. 2002-1913
Application No. 09/054,565

Attention is directed to the brief (Paper No. 18) and answer (Paper No. 19) for the respective positions of the appellant and examiner regarding the merits of these rejections.

DISCUSSION

I. The 35 U.S.C. § 112, second paragraph, of claims 8 through 10, 14, 16, 17, 19, 26 and 28

The examiner considers claims 8 through 10, 14, 16, 17, 19, 26 and 28 to be indefinite for the following reasons:

i. In claim 8, clause (b) the term "it" is vague and indefinite. What is "it" referring to? The same applies to the rest of the claims. In line 9, the phrase "the direction of movement.." lacks clear antecedent basis.

ii. The following phrases lack clear antecedent basis: (claim 9) "the height"; (claim 16) "the direction of travel of the cutting die" (no "travel direction" has been set forth for the cutting die); and (claim 26) "the influence of centrifugal force".

iii. Claim 16 is vague and indefinite in that it is not clear what the claim encompasses. What is encompassed by "adapted to work in conjunction with a rotary anvil"? How is the rotary die "adapted to work"? Due to the nature of the art, the scope of the limitation is unascertainable. Substantially the same applies to claim 26.

iv. Claim 28 is vague and indefinite in that it is not clear what the claim encompasses. What is the claim referring to and where is this shown in the drawings? Moreover, which "base" is the claim referring to, the base of the cutting die or the base of the stripper? [answer, pages 3 and 4].

Appeal No. 2002-1913
Application No. 09/054,565

The appellant concedes that the rejection is well taken to the extent that it is based on the terms "it" in claim 8 and "base" in claim 28, but disputes the other reasons advanced by the examiner (see pages 5 through 7 in the brief). Responding to the appellant's arguments, the examiner in turn concedes the points raised by the appellant (see pages 8 and 9 in the answer).¹ Consistent with these concessions, we shall sustain the standing 35 U.S.C. § 112, second paragraph, rejection with respect to claims 8 and 28, and claims 9, 10 and 14 which depend from claim 8, but not with respect to claims 16, 17, 19 and 26.²

II. The 35 U.S.C. § 102(b) rejection of claims 1 through 4, 6, 15 through 17, 19, 21, 24, 26 and 28 as being anticipated by Rilitz

Rilitz discloses a rotary cross cutter for severing a running web of paper, foil or other relatively thin flexible material into panels, sheets or lengths of a desired size and shape. The cutter comprises an upper rotary drum 1a supporting a

¹ Having conceded these points, it is unclear why the examiner did not simply withdraw the rejection as to the affected claims.

² Although the examiner indicates that the criticism of "it" in claim 8 "applies to the rest of the claims," we are unable to find, and the examiner has not pointed out, any additional recitations of the term "it" which raise indefiniteness problems.

Appeal No. 2002-1913
Application No. 09/054,565

knife 11, a knife-clamping device 9 and a guide 14, and a lower rotary drum 2a supporting a knife 8, a knife-clamping device 7 and a guide 13, with the drums being rotatable to bring the knives into cooperative engagement to sever the web 3. The guides, which are made of rubber or other suitable elastomeric material and located adjacent the rears of their respective knives, prevent the web from adhering to the rotary drums and steer it toward the cutting locus (see column 4, lines 28 through 57; and column 5, line 23, through column 6, line 2). Figure 2 shows each guide as consisting of a base secured to a respective knife-clamping device and a lip-shaped deflector extending upwardly from the base at an angle inclined opposite to the rotational direction of the drum. Of note is that "the radially outermost portion of the deflector [or guide] 13 extends at least close to the circular path for the cutting edge 8a of the knife 8" (column 4, lines 40 through 42).

Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). In other words, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field

Appeal No. 2002-1913
Application No. 09/054,565

of the invention. Scripps Clinic & Research Found. v. Genentech Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991). It is not necessary that the reference teach what the subject application teaches, but only that the claim read on something disclosed in the reference, i.e., that all of the limitations in the claim be found in or fully met by the reference. Kalman v. Kimberly Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

In explaining how and why independent claims 1 and 15 are fully met by Rilitz, the examiner reads the limitations in these claims pertaining to the base (claim 1) or board (claim 15), the scrap cutting blade and the scrap stripper on the knife-clamping device 7, the knife 8 and the guide 13, respectively, of Rilitz's lower rotary drum 2a (see pages 4 and 9 through 12 in the answer). The appellant counters that since Rilitz does not relate to a die cutter for cutting and ejecting scrap from a corrugated board, it fails to meet the various functional limitations in claims 1 and 15 which define the scrap cutting blade and the scrap stripper, and that Rilitz additionally fails to meet the structural limitations in these claims defining the scrap stripper (see pages 7 through 10 in the brief).

Appeal No. 2002-1913
Application No. 09/054,565

The examiner's position here is well founded; the appellant's is not.

As accurately pointed out by the appellant, Rilitz does not describe the lower rotary drum 2a, knife 8, knife-clamping device 7 and guide 13 in terms of being a die cutter for cutting and ejecting scrap from a corrugated board. Claims 1 and 15, however, recite a rotary cutting die per se, not a rotary cutting die in combination with a cooperating anvil and/or a corrugated board, and not a method of cutting corrugated board passing between a rotary cutting die and an anvil. The appellant has not cogently explained or established, nor is it apparent, why Rilitz's lower rotary drum 2a and the components mounted thereon are not inherently capable of use as a die cutter for cutting and ejecting scrap from a corrugated board. Thus, Rilitz meets the functional limitations in claims 1 and 15 under principles of inherency. Furthermore, Figure 2 of Rilitz clearly shows that the guide 13 comprises a base and a flexible finger (claim 1) or outer flexible portion (claim 15) which meet the scrap stripper structural limitations in claims 1 and 15.

Thus, the appellant's position that the subject matter recited in claims 1 and 15 distinguishes over Rilitz is not persuasive. Accordingly, we shall sustain the standing 35 U.S.C.

Appeal No. 2002-1913
Application No. 09/054,565

§ 102(b) rejection of claims 1 and 15 as being anticipated by Rilitz.

We also shall sustain the standing 35 U.S.C. § 102(b) rejection of dependent claims 2 through 4, 6, 16, 17, 19, 21, 24, 26 and 28 as being anticipated by Rilitz since the appellant has not challenged such with any reasonable specificity, thereby allowing these claims to stand or fall with parent claims 1 and 15 (see In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987)).

III. The 35 U.S.C. § 103(a) rejection of claims 5, 7, 18 and 20 as being unpatentable over Rilitz

We shall sustain the standing 35 U.S.C. § 103(a) rejection of dependent claims 5, 7, 18 and 20 as being unpatentable over Rilitz since the appellant has not challenged such with any reasonable specificity, thereby allowing these claims to stand or fall with parent claims 1 and 15 (see In re Nielson, supra).

IV. The 35 U.S.C. § 102(e) rejection of claims 1 through 6, 8 through 10, 14 through 17, 19, 21, 24, 26, 28 and 29 as being anticipated by Okonski

Okonski discloses a cutting die system for forming patterns in a web of sheet-like material such as paper. The system 10

Appeal No. 2002-1913
Application No. 09/054,565

includes a rotatable die holder 20, a steel cutting die plate 30, a raised pattern surface 50 on the cutting die plate for compressing or cutting out material from the web 70, a series of push pattern projections 40 partially cut out from and extending outwardly from the cutting die plate, and an anvil 60 disposed adjacent the rotatable die holder. According to Okonski,

[w]hen the cutting die plate 30 rotates in its position as mounted on the die holder 20, the cutting pattern 50 cuts the pattern thereby generating scrap material or waste from the web or blank 70. The push pattern projections 40 cause the scrap material or waste from the web or blank to be resiliently pushed away from the system 10 as it is cut to permit for remote waste collection. Because the push pattern projections 40 are oriented in the direction of rotation 14 which is complementary to the direction of rotation of the die holder 20 and the anvil 60, the die holder 20 and the anvil 60 are caused to compress the push patterns 40 during the cutting of the web or blank without damage to the anvil 60 [column 4, line 62 through column 5, line 7].

As persuasively argued by the appellant (see pages 10 through 13 in the brief), the examiner's determination (see pages 5 and 12 through 15 in the answer) that the structural limitations in independent claims 1, 8 and 15 relating to the scrap stripper are met by Okonski's push patterns 40 is unsound. Claim 1 requires a scrap stripper which includes "a base, and a flexible finger integral with the base and extending outwardly over the base and at an acute angle with respect to the base such that an opening is defined between the angled finger and the

Appeal No. 2002-1913
Application No. 09/054,565

base." Claim 8 requires a scrap stripper "having a base and a flexible, angled finger . . . wherein the flexible finger is integral with the base and extends outwardly over the base at an acute angle with respect to the base such that an opening is defined between the angle finger and the base." Claim 15 requires a scrap stripper which includes "a base, an outer flexible portion extending outwardly over the base and at an acute angle with respect to the base . . . and an open relief area defined intermediately between the outer portion and the base within the scrap stripper." Notwithstanding the examiner's finding to the contrary, the portion of Okonski's cutting die plate 30 from which the push pattern projections 40 are partially cut does not constitute a base as so defined.

Since Okonski does not meet all of the limitations in independent claims 1, 8 and 15, we shall not sustain the standing 35 U.S.C. § 102(e) rejection of claims 1, 8 and 15, and dependent claims 2 through 6, 9, 10, 14, 16, 17, 19, 21, 24, 26, 28 and 29, as being anticipated by Okonski.

V. The 35 U.S.C. § 103(a) rejection of claims 7, 18 and 20 as being unpatentable over Okonski

Because Okonski would not have suggested a rotary cutting die meeting the scrap stripper structural limitations in parent

Appeal No. 2002-1913
Application No. 09/054,565

claims 1 and 15, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of dependent claims 7, 18 and 20 as being unpatentable over Okonski.

VI. The 35 U.S.C. § 103(a) rejection of claims 1 through 14 through 21, 24 and 26 through 29 as being unpatentable over Smithwick in view of Okonski

Smithwick discloses a rotary die cutter die for making container blanks from corrugated paper board. The die cutter 100 includes an upper die roll 102, a lower anvil roll 104, and a cutting die 108 fixed to the die roll 102. The cutting die 103 comprises a die board 110, steel cutting rules 112, and a resilient scrap ejector 10 made of a closed cell, high density foam rubber. The scrap ejector may take the forms shown in Figures 3, 4, 7 and 8.

Conceding that Smithwick's scrap ejector 10 does not meet the above discussed scrap stripper structural limitations in independent claims 1, 8 and 15, the examiner concludes that it would have been obvious to modify this scrap stripper in view of Okonski's push pattern projections 40 to cure this shortcoming. As explained above, however, Okonski is deficient with respect to the limitations at issue. Moreover, there is nothing in Okonski's disclosure of the push pattern projections 40 which

Appeal No. 2002-1913
Application No. 09/054,565

would have suggested any relevant modification of Smithwick's foam rubber scrap ejector.

Therefore, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claims 1, 8 and 15, and dependent claims 2 through 7, 9, 10, 14, 16 through 21, 24 and 26 through 29, as being unpatentable over Smithwick in view of Okonski.

VII. The 35 U.S.C. § 103(a) rejection of claims 1 through 10, 14 through 21, 24 and 26 through 29 as being unpatentable over Smithwick in view of Wright

We shall not sustain the standing 35 U.S.C. § 103(a) rejection of claims 1 through 10, 14 through 21, 24 and 26 through 29 as being unpatentable over Smithwick in view of Wright given the examiner's concession that it is unsound (see page 18 in the answer).³

SUMMARY

The decision of the examiner:

a) to reject claims 8 through 10, 14, 16, 17, 19, 26 and 28 under 35 U.S.C. § 112, second paragraph, is affirmed with respect to claims 8 through 10, 14 and 28, and reversed with respect to claims 16, 17, 19 and 26;

³ Once again, it is unclear why the examiner did not simply withdraw the rejection.

Appeal No. 2002-1913
Application No. 09/054,565

b) to reject claims 1 through 4, 6, 15 through 17, 19, 21, 24, 26 and 28 under 35 U.S.C. § 102(b) as being anticipated by Rilitz is affirmed;

c) to reject claims 5, 7, 18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Rilitz is affirmed;

d) to reject claims 1 through 6, 8 through 10, 14 through 17, 19, 21, 24, 26, 28 and 29 35 U.S.C. § 102(e) as being anticipated by Okonski is reversed;

e) to reject claims 7, 18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Okonski is reversed;


f) to reject claims 1 through 10, 14 through 21, 24 and 26 through 29 under 35 U.S.C. § 103(a) as being unpatentable over Smithwick in view of Okonski is reversed; and


g) to reject claims 1 through 10, 14 through 21, 24 and 26 through 29 under 35 U.S.C. § 103(a) as being unpatentable over Smithwick in view of Wright is reversed.

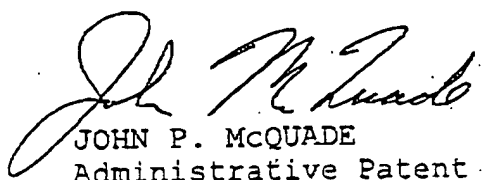
Appeal No. 2002-1913
Application No. 09/054,565

No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a).

AFFIRMED-IN-PART


IRWIN CHARLES COHEN
Administrative Patent Judge


NEAL E. ABRAMS
Administrative Patent Judge


JOHN P. MCQUADE
Administrative Patent Judge

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) BOARD OF PATENT
) APPEALS
) AND
) INTERFERENCES
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JPM/gjh



US005161442A

United States Patent [19]

Rillitz et al.

[11] Patent Number: 5,161,442

[45] Date of Patent: Nov. 10, 1992

[54] APPARATUS FOR CROSS CUTTING
RUNNING WEBS[75] Inventors: Norbert Rillitz; Wolfgang Faust;
Arthur Van Wijk, all of Hamburg,
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[21] Appl. No.: 808,189

[22] Filed: Dec. 13, 1991

[30] Foreign Application Priority Data

Feb. 27, 1991 [DE] Fed. Rep. of Germany 4106084

[51] Int. Cl. B26D 1/62

[52] U.S. Cl. 83/117; 83/345;
83/449; 83/493[58] Field of Search 83/345, 310, 373, 449,
83/493, 674, 677, 322, 323, 113, 115, 116, 117,
118, 119, 120, 121, 122

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[57] ABSTRACT

A cross cutter for a running web of paper which is transported along a horizontal path has an upper rotary knife holder above and a lower rotary knife holder below the horizontal path. The holders carry knives which extend transversely of the path, and each holder further carries an elastic lip-shaped deflector which is located behind the respective knife and serves to maintain the leader of the web behind the separated length of the web in or close to the path so that the leader can enter a transporting unit which advances the severed lengths of the web to a stacking or other processing station. The lower deflector is installed immediately behind and the upper deflector is spaced apart from the rear side of the respective knife.

7 Claims, 1 Drawing Sheet

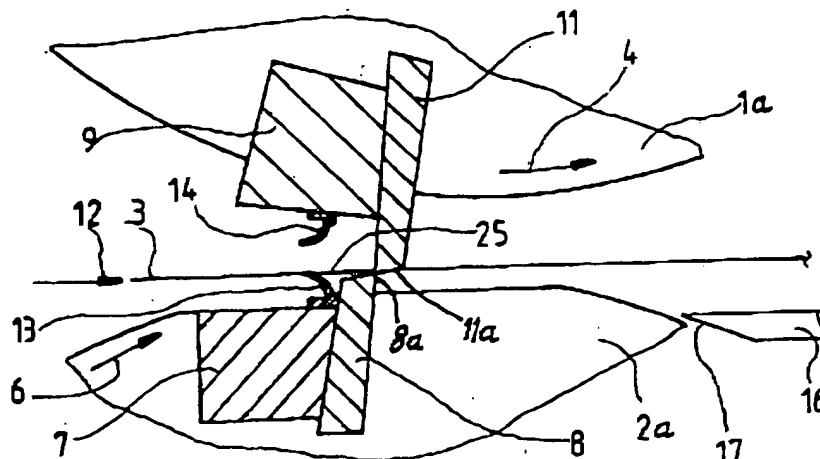


Fig. 1

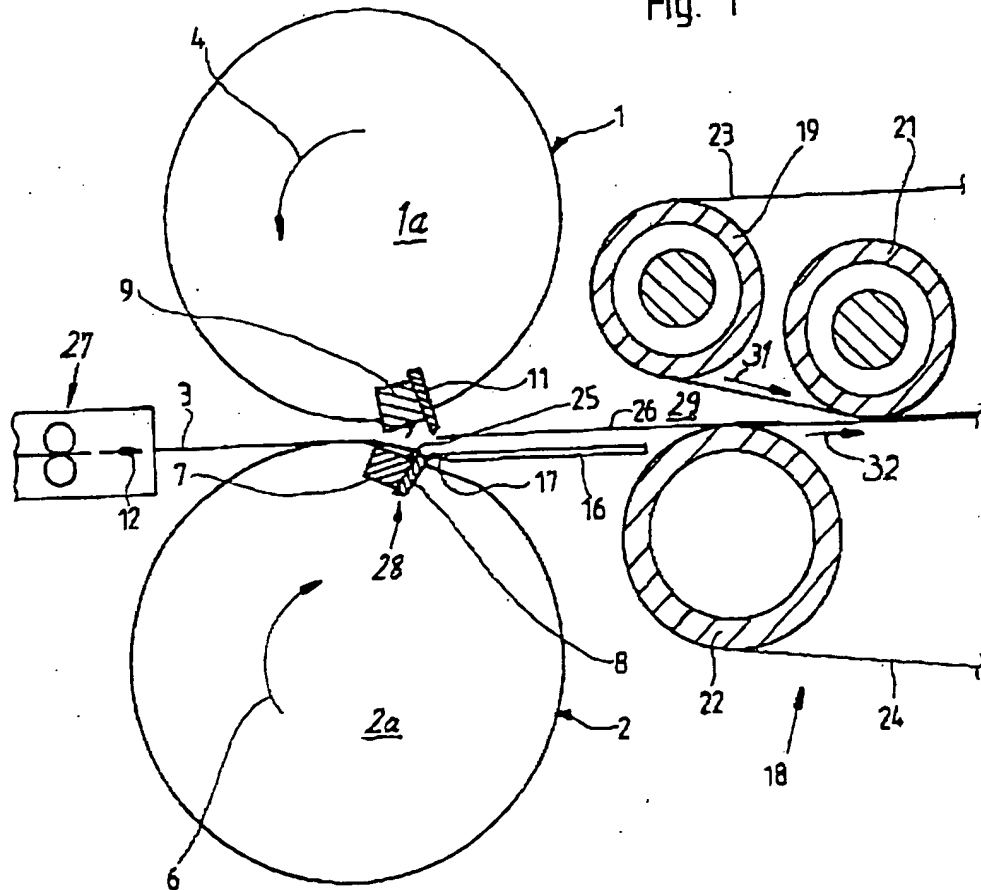
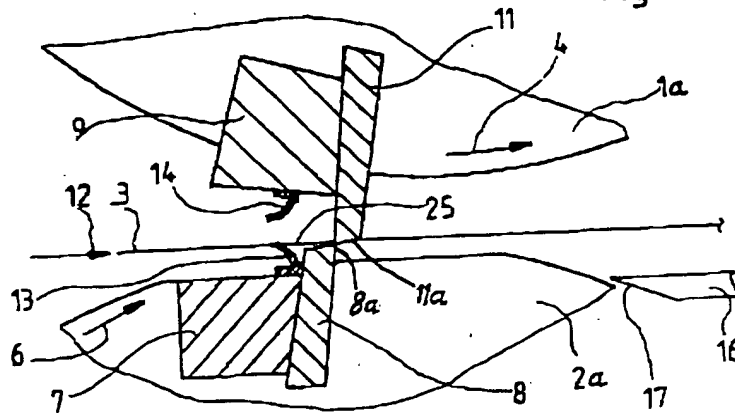


Fig. 2



APPARATUS FOR CROSS CUTTING RUNNING WEBS

BACKGROUND OF THE INVENTION

The invention relates to severing or cutting apparatus in general, and more particularly to improvements in apparatus for severing paper and/or other relatively thin flexible sheet materials. Still more particularly, the invention relates to improvements in so-called cross cutters which can be utilized to subdivide running webs or strips of flexible material into panels, sheets or lengths of desired size and shape.

Apparatus of the type to which the present invention pertains are disclosed, for example, in U.S. Pat. No. 4,201,102 granted May 6, 1980 to Rudszinat and in U.S. Pat. No. 4,255,998 granted Mar. 17, 1991 to Rudszinat.

As a rule, a cross cutter employs two rotary drum-shaped knife holders which are disposed at opposite sides of the path for a running web of paper, metallic foil, plastic foil or other relatively thin flexible sheet material. The holders are driven in synchronism so that their knives meet at a selected portion of the path for the web and sever the web transversely of the direction of advancement of the web toward a station where the separated panels, sheets or lengths are accepted by a transporting, stacking or other processing unit. Problems arise when the freshly formed leader of a relatively thin and readily flexible web exhibits a tendency to adhere to the one or the other knife holder immediately behind the locus of the cut, i.e., immediately behind the freshly formed sheet, panel or length. Such tendency of the freshly formed leader at the front end of the remainder of the running web can result in advancement of the leader in a wrong direction, i.e., the leader is likely to miss the receiving or intake or inlet end of the mechanism which is to engage and transport successive freshly separated sheets, panels or lengths of flexible material. In many or most instances, the leader behind a freshly separated sheet of paper or like flexible web or strip stock tends to adhere to the lower knife holder or tends to curl so that it is likely to miss the inlet of the transporting unit downstream of the severing station. This can result in lengthy interruptions of operation of one machine or of an entire battery of machines, e.g., if the cross cutter is used in a production line which is designed to turn out steno pads, exercise pads, stacks of wrapped, boxed and crated paper sheets and the like.

German patent application No. 22 61 729 of Ay Kur (published Jul. 4, 1974) discloses a cross cutter which is equipped with hold down devices in the form of air discharging nozzles or in the form of webs or ribs which are provided on the knife holders and serve to curl and thereby stiffen the leader of a running web behind the freshly separated sheet to thus reduce the tendency of the leader to stray by moving in a wrong direction and to thus bypass the sheet transporting unit. A drawback of this proposal is that the reliability of the hold down devices is overly dependent upon the characteristics (such as flexibility) of the running web. Additional problems arise if the hold down devices are utilized in machines which simultaneously process two or more running webs of paper or a like relatively thin and flexible material. Thus, it is necessary to individually adjust each and every one of two or more cross cutters and their hold down devices with attendant losses in time and long interruptions for each change of setup.

OBJECTS OF THE INVENTION

An object of the invention is to provide a cross cutting apparatus for running webs of paper or the like wherein the leaders of a web behind the freshly severed sheets, panels or lengths are less likely to stray from their prescribed paths than in heretofore known apparatus.

Another object of the invention is to provide a cross cutting apparatus wherein the leader of the running web is confined to advancement along a prescribed path in a novel and improved way.

A further object of the invention is to provide a method of modifying an existing cross cutter for paper or the like to reduce the likelihood of advancement of the leader of the running web in a wrong direction.

An additional object of the invention is to provide novel and improved conveyors for the knives of a cross cutter.

Still another object of the invention is to provide a cross cutter which can be utilized in existing production lines as a superior substitute for heretofore known and used cross cutters.

A further object of the invention is to provide novel and improved web guides for use in a cross cutter for running webs or strips of paper and the like.

Another object of the invention is to provide a novel and improved method of preventing curling, sticking and/or other undesirable tendencies of the leaders of running webs of paper or the like at the severing station of a cross cutter.

An additional object of the invention is to provide a cross cutter which renders it possible to sever a running web at a high frequency without risking stray movements of the leader behind a freshly separated sheet, panel or length of flexible material.

A further object of the invention is to provide a machine which embodies a cross cutting apparatus of the above outlined character.

SUMMARY OF THE INVENTION

The invention is embodied in an apparatus for repeatedly severing a web of relatively thin flexible material which is advanced in a predetermined direction along a predetermined path. The improved apparatus comprises first and second knives disposed at opposite sides of and extending substantially transversely of the predetermined path and being respectively movable in first and second directions along first and second endless paths having portions adjacent a portion of the predetermined path where the web is severed by the knives to separate a length of flexible material and to provide the web with a leader behind the separated length, first and second conveyors which have means for moving the first and second knives along the respective first and second endless paths, and first and second guides which are provided on the respective conveyors upstream of or behind the respective knives (as seen in the first and second directions) to maintain the leader of the web at least close to the predetermined path.

Each conveyor can constitute a rotary (e.g., drum-shaped) conveyor, and at least one of the guides can comprise an elongated deflector which extends substantially transversely of the predetermined path.

One of the endless paths can be disposed above the other endless path. For example, if the predetermined path for the web is a substantially horizontal path, the first conveyor and its knife can be located at a level

3

below and the second conveyor and its knife can be located at a level above the horizontal path.

At least one of the guides can comprise or consist of rubber or another suitable elastomeric material. Such at least one guide can comprise or constitute an elastic lip which extends substantially transversely of the predetermined path.

At least one of the guides can be curved counter to the direction of movement of the respective knife along its endless path. Furthermore, at least one of the two guides can be at least substantially parallel to the rear side of the respective knife.

If the path for the web is a substantially horizontal path so that one of the conveyors (e.g., the first conveyor) is located at a level below such path, the first guide is preferably closely or immediately adjacent the rear side of the first knife. On the other hand, the second guide can be spaced apart from the rear side of the second knife if the second knife is located at a level above the path for the web.

If the first conveyor is a rotary conveyor so that the cutting edge of the first knife is caused to orbit along a circular path, the first guide preferably extends from the first conveyor substantially to the circular path of such cutting edge. On the other hand, and if the second conveyor is also a rotary conveyor so that the cutting edge of the second knife also orbits along a circular path, the second guide preferably extends from the second conveyor toward but preferably at least slightly short of the circular path which is described by the cutting edge of the second knife at a level above the path for the web.

At least one of the conveyors can comprise a holder (e.g., a substantially drum-shaped or rotor-shaped body) and a device for clamping the respective knife to the holder. The guides can be provided on the respective clamping devices, and each such clamping device can comprise a wedge.

One of the conveyors can comprise means for moving the respective knife at a first speed, and the other conveyor can comprise means for advancing the respective knife at a different second speed. The arrangement can be such that the speed of the upper knife exceeds the speed of the lower knife.

The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The improved cross cutting apparatus itself, however, both as to its construction and its mode of operation, together with additional features and advantages thereof, will be best understood upon perusal of the following detailed description of certain presently preferred specific embodiments with reference to the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a schematic partly elevational and partly vertical sectional view of an apparatus which embodies one form of the present invention and defines a substantially horizontal path for a running web of paper or the like; and

FIG. 2 is a greatly enlarged view of a detail in the apparatus of FIG. 1, showing the knives and the associated guides during advancement through the severing or cross cutting station.

DESCRIPTION OF PREFERRED EMBODIMENTS

The cross cutting apparatus which is shown in FIG. 1 comprises a unit 27 which serves to advance a web 3

4

of paper or other relatively thin flexible material along a substantially horizontal path in the direction of arrow 12. Such path extends between an upper conveyor 1 which is rotatable about a horizontal axis to move an upper knife 11 along an endless path in the direction of arrow 4, and a lower conveyor 2 which is rotatable about a horizontal axis to move a lower knife 8 along an endless path in the direction of arrow 6. The knives 8, 11 meet once during each revolution of the respective conveyors 2, 1 to sever the running web 3 at a severing station 28 and to thus separate a sheet, panel or length 26 with simultaneous formation of a leader 25 immediately behind the trailing end of the freshly separated length 26. Each of the two conveyors 1, 2 comprises a rotary drum-shaped carrier or holder 1a, 2a and a wedge-like clamping device 9, 7 which engages and maintains the respective knife 11, 8 in a predetermined position relative to the holder. The cutting edges 11a, 8a of these knives are caused to orbit along circular paths when the respective holders 1a, 2a are driven to rotate in directions which are indicated by the arrows 4 and 6, respectively.

The diameter of the holder 1a is smaller than the diameter of the holder 2a and the conveyor 1 is operated to drive the holder 1a at a peripheral speed which is higher than the peripheral speed of the holder 2a for the knife 8.

In accordance with a feature of the invention, the wedge-like clamping device 7 for the lower knife 8 carries a first guide 13 which can be made of rubber or another suitable elastomeric material and is immediately or very closely adjacent the rear or upstream side of the knife 8 (as seen in the direction of arrow 6). The illustrated guide 13 is an elongated lip-shaped deflector which extends transversely of the path for the web 3 and is parallel to the rear or upstream side of the knife 8. FIG. 2 shows that the guide or deflector 13 is curved counter to the direction of arrow 6 (i.e., counter to the direction of movement of the knife 8 along its endless path, and that the radially outermost portion of the deflector 13 extends at least close to the circular path for the cutting edge 8a of the knife 8. In other words, the radially outermost portion of the guide 13 can steer the adjacent portion of the web 3 toward the locus where the cutting edges 8a, 11a of the knives 8, 11 cooperate once during each revolution of the conveyors 2, 1 to sever the web 3 and to separate a length 26 of flexible material from the thus obtained leader 25 at the front end of the remaining portion of the web.

The wedge-like clamping device 9 for the upper knife 11 carries a second guide 14 which is or can be a mirror image of the lower guide 13 except that it is spaced apart from the rear or upstream side of the knife 11 and does not extend all the way to the circular path for the cutting edge 11a of the knife 11. The material of the guide 14 may but need not be the same as the material of the lower guide 13.

The cross cutter of FIG. 1 further comprises a guide in the form of a bridge 16 which is located immediately downstream of the severing station 28. The sharp trailing (left-hand) end 17 of the bridge 16 constitutes a scraper which engages the peripheral surface of the lower holder 2a save at the knife 8 where the peripheral surface of the holder 2a includes a flat portion. The purpose of the bridge 16 is to reliably separate the freshly formed lengths 26 of flexible material from the conveyor 2 as well as to direct the leaders 25 into the inlet 29 of a transporting unit 18 serving to advance

successive lengths 26 to the next processing station, e.g., into a stacker for discrete sheets or into an apparatus which assembles sheets into exercise pads or other stationery products. The illustrated transporting unit 18 comprises pulleys or sheaves 19, 21, 22 for endless conveyor belts 23 and 24. The neighboring reaches of the belts 23, 24 are caused to advance in directions which are respectively indicated by arrows 31 and 32.

The mode of operation is as follows:

The unit 27 draws the web 3 off a reel or another suitable source, not specifically shown, and advances the web in the direction of arrow 12, i.e., along a substantially horizontal path. The unit 27 can comprise one or more pairs of standard advancing rolls which are driven to advance the web 3 at a desired speed. The running web 3 is severed at selected intervals by the cutting edges 8a, 11a of the knives 8, 11 so that its front portion is subdivided into a series of discrete sheets, lengths or panels 26 each having a desired length. Successive lengths 26 enter the inlet 29 and are entrained by the belts 23, 24 toward a stacking or other processing station, not shown.

The radially outermost portion of the rearwardly curved lip-shaped elastic guide 13 engages the freshly formed leader 25 immediately behind the locus of severing the web 3 (see FIG. 2) and thus maintains the leader 25 away from the peripheral surface of the lower holder 2a. The purpose of the upper guide 14 is to return the leader 25 into the prescribed path (toward and into the inlet 29) if the deflecting action of the lower guide 13 is excessive and/or if the leader 25 tends to curl upwardly and/or if the leader 25 is attracted toward the peripheral surface of the upper holder 1a by suction due to higher rotational speed of the holder 1a of the conveyor 1.

An additional function of the lower guide 13 is to prevent the leader 25 from entering the narrow clearance between the peripheral surface of the lower holder 2a and the scraper-like sharp trailing end 17 of the bridge 16 immediately downstream of the severing station 28. This ensures that the leader 25 can advance along the bridge 16 and enters the inlet 29 to be engaged and entrained by the belts 23 and 24.

It has been found that the guides 13, 14 cooperate to stabilize the leader 25 so that the latter invariably advances along the prescribed path and enters the inlet 29 to be engaged by the belts 23, 24.

Each of the holders 1a, 2a can be provided with a plurality of preferably equidistant knives. It is equally within the purview of the invention to replace the holders 1a, 2a with chains or other suitable conveying means each of which can carry one or more knives. Furthermore, the web 3 can be caused to advance along a vertical path or along a path which is inclined to the horizontal and to the vertical. Still further, the one and/or the other guide need not be elastic, and each of these guides can consist of a row of aligned relatively short guides. Elastic guides (particularly an elastic guide beneath a web which is advanced along a substantially horizontal path) are preferred at this time because they can yieldably intercept the leader 25 and gently return it into the prescribed path. This is particularly important if the web consists of a highly sensitive material which is likely to be scratched and/or otherwise adversely affected as a result of contact with one or more relatively hard guides. At the same time, elastic guides are fully capable of preventing the leader of the running web from adhering to the respective knife holders and

/or other parts of the conveyors for the respective knives.

Though it is possible to install the lower guide 13 at a certain distance from the rear or upstream side of the knife 8, the mounting which is shown in FIG. 2 is preferred in many instances because the guide 13 is even more likely to perform the aforesaid additional function, namely that of preventing the leader 25 from penetrating into the clearance between the peripheral surface of the holder 2a and the sharp trailing end 17 of the bridge 16 downstream of the severing station 28.

The feature that the radially outermost portion of the lower guide 13 extends at least very close to the circular path for the cutting edge 8a of the knife 8 is desirable and advantageous because this entails a certain tensioning of the web 3 during severing by the cutting edges 8a, 11a of the knives 8 and 11. Such tensioning contributes to the making of clean cuts. The aforesaid mounting of the upper guide 14 at a certain distance from the rear side of the respective knife 11 is particularly desirable when the peripheral speed of the holder 1a exceeds the peripheral speed of the holder 2a. The radially outermost portion of the guide 14 then intercepts the leader 25 if the latter is propelled upwardly by the lower guide 13. The freshly formed leader 25 exhibits a certain tendency to move upwardly toward the peripheral surface of the holder 1a due to the aforesaid tensioning action of the lower guide 13, i.e., due to the fact that the radially outermost portion of the guide 13 preferably extends at least close to or all the way to the circular path for the cutting edge 8a of the lower knife 8.

An advantage of the feature that the guides 13, 14 are mounted on the respective clamping devices 7, 9 is that such mounting can be completed in the plant subsequent to making of the clamping members. The guides 13, 14 can be glued or otherwise reliably secured to the respective clamping devices 7, 9 or to the respective holders 2a, 1a. In fact, at least the lower guide 13 can be secured directly to the rear side of the knife 8.

An advantage which is common to all embodiments of the improved cross cutting apparatus is that the leader 25 of a running web 3 of relatively thin and readily flexible paper or like material is highly unlikely to adhere to the conveyors for the knives and is much more likely to be directed in substantially stretched condition into the transporting unit 18 downstream of the severing station 28.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic and specific aspects of our contribution to the art and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the appended claims.

We claim:

1. Apparatus for repeatedly severing a web of relatively thin flexible material which is advanced in a predetermined direction along an at least substantially horizontal path, comprising first and second knives disposed at opposite sides of and extending substantially transversely of said at least substantially horizontal path and being respectively movable in first and second directions along first and second endless paths having portions adjacent a portion of said at least substantially

horizontal path where the web is severed by said knives to separate a length of flexible material and to provide the web with a leader behind the separated length, said second endless path being disposed above said first endless path and each of said knives having a front side and a rear side, facing downstream and upstream, respectively, with respect to said at least substantially horizontal path; first and second rotary conveyors having means for moving said first and second knives along the respective endless paths; and first and second guides fixed on the respective conveyors upstream of the respective knives, with respect to said at least substantially horizontal path, to maintain the leader at least close to said at least substantially horizontal path, said second guide being spaced apart from the rear side of said second knife, at least one of said guides comprising an elongated deflector extending substantially transversely of said at least substantially horizontal path and at least one of said guides comprising an elastomeric material and having an elastic lip with extends substantially transversely of said at least substantially horizontal path, at least said first guide extending substantially transversely of said predetermined direction and being curved counter to the direction of movement of said first knife along said first endless path, said first guide being at least closely adjacent the rear side of said first knife.

2. The apparatus of claim 1, wherein at least said first guide is substantially parallel to the rear side of said first knife.

3. The apparatus of claim 1, wherein said first endless path is a circular path and said first knife has a cutting edge which advances along a circular path in response to movement of the first knife along said first endless path, said first guide extending from said first conveyor at least substantially to said circular path.

4. The apparatus of claim 1, wherein said second knife has a cutting edge which advances along a circular path in response to movement of the second knife along said second endless path, said second guide extending from said second conveyor toward but short of said circular path.

5. The apparatus of claim 1, wherein at least said first conveyor comprises a holder and a device for clamping said first knife to said holder, said first guide being provided on said clamping device.

6. The apparatus of claim 5, wherein said holder includes a rotor and said clamping device comprises a wedge mounted in said rotor.

7. The apparatus of claim 1, wherein one of said conveyors includes means for moving the respective knife and the respective guide at a first speed, the other of said conveyors comprising means for moving the respective knife and the respective guide at a different second speed.

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I hereby certify that on this 20th day of October, 2003, two (2) bound copies of the foregoing Brief of Appellant were served via U.S. mail, postage pre-paid, addressed to the following:

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Counsel for Appellee

I also certify that on this 20th day of October, 2003, the required number of the Brief of Appellant were hand filed at the Office of the Clerk, United States Court of Appeals for the Federal Circuit.

The necessary filing and service to Counsel were performed in accordance with the instructions given me by counsel in this case.



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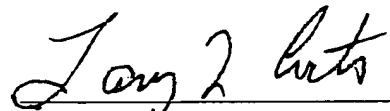
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2. This brief has been prepared in proportionally spaced typeface Microsoft Word 2000 in 14 point Times New Roman font. As permitted by Fed. R. App. Proc. 32(a)(7)(C), the undersigned has relied upon the word count of this word-processing system in preparing this certificate.

Dated: October 20, 2003


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